

## **Groundwater contamination in relation with the increasing urbanization rate in Africa. Case of Cotonou and Porto Novo (Benin).**

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More than one billion people in the world still have no access to sufficient resources in drinking water (United Nation, 2014). In particular, large cities in Africa have to face several problems: 1) population growth associated with the strongest urbanization rate increase (5% per year) of the world leading to a dramatic increase in good-quality water needs, 2) low levels of solid waste management and sanitation services, 3) insufficient or disconnected water supply services, 4) low knowledge of water resources availabilities. The situation in Benin is a relevant illustration of the problems that Africa has to face to. As many other coastal urban areas in Africa (Showers, 2002; Re et al., 2011), Cotonou and Porto Novo cities have seen a rapid increase of their population as these towns constitute a corridor of transit for the imports and the exports in the nearby countries. Hence, they are very attractive for job hunters, and constitute the administrative centers for the whole country. This rapid population growth amplifies the problem of water supply and may generate serious impacts on groundwater resources: depletion due to overexploitation, salinization due to seawater intrusion and pollution linked to human activities. In order to insure a safe water supply in the context of increasing urbanization and population in the coastal area of Cotonou and Porto Novo, the identification of the main sources of pollution is essential for the implementation of long-term water management procedures. Based on two field campaigns carried out in January-2012 (dry season) and August-2012 (rainy season), hydrochemical analysis have been realized on groundwater sampled from boreholes drilled in the CTA (Continental Terminal Aquifer) and wells dug in the QCA (Quaternary Coastal Aquifer) in order to investigate the origin of salinization and the present time extension of the nitrate contamination. Historical data have also been collected from previous studies in order to investigate the evolution of the saline intrusion within both aquifers and to propose managerial schemes for the sustainable exploitation of the groundwater resources.